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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,908	04/25/2001	Bruce L. Bruso	147363/9079-6US	7563

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EXAMINER

MITCHELL, KATHERINE W

ART UNIT

PAPER NUMBER

3673

DATE MAILED: 05/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/841,908

Applicant(s)

BRUCE L. BRUSO

Examiner

Katherine W Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

### **DETAILED ACTION**

1. Examiner is WITHDRAWING a restriction requirement discussed with John Marshall on 4-23-2002, in that the search for the invention of in-site remediation with trencher, claims 7-12, resulted in a search for the non-elected claims and that the 2 methods are not, after careful consideration and review of the prior art, patentably distinct. Therefore, all claims are being considered.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 discloses that the contaminant concentration level is reduced by more than 50%. However, claim 7, upon which claim 10 depends, discloses a target concentration level. It is unclear whether applicant is referring to less than 50% of the original concentration level, or less than 50% of the target concentration level. Examiner is examining as less than 50% of the target concentration level.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5 and 7-11 are rejected under 35 U.S.C. 102(b) as anticipated by Manchak Jr. US Patent 4834194, hereafter called Manchak Jr. '194.

Re claims 1-5 and 7-11: Examiner notes that applicant teaches that step (c) of claims 1 and 7 are optional and may not be required; however, examiner is addressing it in an effort to speed prosecution of the case. Manchak Jr. '194 teaches a method of soil remediation to measure and reduce the level of contaminants in soil, comprising churning or comminuting the contaminated soil in situ with a soil mixing device (10,64), injecting hot air into the contaminated soil as it is being churned to thermally strip off organic compounds, and introducing a chemical agent, such as potassium permanganate, into the soil to continue reducing the contaminant level, in col 3 lines 12-55, col 4 lines 8-63, col 6 lines 5-12, and col 8 lines 8-55. Examiner notes that Manchak Jr. '194 emphasizes in col 6 lines 5-12 that the method primarily deals with analyzing contaminants, but can also be used to treat contaminants so found, using any combination of steps of injecting additional hot air for stripping volatile contaminants, injection of treatment chemicals, etc. The cutting tool meets the broad definition of a trenching tool. Since the method includes contaminant analysis and contaminant treatment, it is inherent that there would be a target contaminant level, and that treatment would be done until the target level is obtained. Manchak, Jr. '194 claims 15 and 16 disclose that chemical oxidants, such as permanganate, are injected into the soil to neutralized unremoved {emphasis by examiner} contaminants, thus inherently teaching that the chemical treatment is done if needed after the air stripping. Air stripping is disclosed as the initial treatment step, and the difference in cost of

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permanganate versus air would explain this. Soil volatile contaminants that are treated with oxidizers and/or bioremediation inherently include volatile organics. Examiner also notes that claim 13 and col 6 lines 5-12 disclose the option of multiple hot air injections, thus the hot air injection comprises a ground heater system for both preheating the soil and hot air injection for soil stripping.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manchak Jr '194 in view of Manchak Jr. US Patent 4844807, hereafter called Manchak Jr '807.

Re claims 1-2: Examiner notes that applicant teaches that step (c) of claim 1 is optional and may not be required; however, examiner is addressing it in an effort to speed prosecution of the case. Manchak Jr. '194 teaches a method of soil remediation to measure and reduce the level of contaminants in soil, comprising churning or comminuting the contaminated soil in situ with a soil mixing device (10,64), injecting hot air into the contaminated soil as it is being churned to thermally strip off organic compounds, and introducing a chemical agent, such as potassium permanganate, into the soil to continue reducing the contaminant level, in col 3 lines 12-55, col 4 lines 8-63, col 6 lines 5-12, and col 8 lines 8-55. While examiner believes that Manchak Jr. '194

does teach that the contaminants are organic, examiner is presenting an alternative argument to speed prosecution in case it is interpreted that the element is not inherently taught. Manchak Jr. '807 specifically teaches using a soil remediation method comprising soil comminution, hot vapor injection, and chemical oxidant, such as permanganate, injection, for volatile organic contaminants in the abstract, col 2 lines 45-66, and col 9 lines 4-34. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Manchak Jr. '194 to include using the remediation method specifically on organic contaminants in soil, in view of Manchak Jr. '807, in order to specifically ensure that contaminants requiring oxidizing agents and air, such as organics, would be treated with the method to obtain a large application and customer base.

Re claims 3-5: Examiner notes that Manchak Jr. '194 emphasizes in col 6 lines 5-12 that the method primarily deals with analyzing contaminants, but can also be used to treat contaminants so found, using any combination of steps of injecting additional hot air for stripping volatile contaminants, injection of treatment chemicals, etc. The cutting tool meets the broad definition of a trenching tool. Since the method includes contaminant analysis and contaminant treatment, it is inherent that there would be a target contaminant level, and that treatment would be done until the target level is obtained. Manchak, Jr. '194 claims 15 and 16 disclose that chemical oxidants, such as permanganate, are injected into the soil to neutralized unremoved {emphasis by examiner} contaminants, thus inherently teaching that the chemical treatment is done if needed after the air stripping. Air stripping is disclosed as the initial treatment step, and

the difference in cost of permanganate versus air and the possibly undesirable by-products of large amounts of permanganate would explain the implied teaching that the air stripping is used until it is no longer practically effective, and then the permanganate would be used to complete the remediation. Examiner also notes that claim 13 and col 6 lines 5-12 disclose the option of multiple hot air injections, thus the hot air injection comprises a ground heater system for both preheating the soil and hot air injection for soil stripping.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manchak Jr '194 and Manchak Jr '807, and further in view of Vinegar et al. US Patent 5190405. As discussed above, Manchak Jr '194 and Manchak Jr '807 teach all the elements except that a thermal insulation is laid over the soil after introducing the chemical oxidizing agent. It is a well-known principle of reaction kinetics and thermodynamics that oxidation reactions require energy ( $\Delta H_{\text{reaction}}$ ), and that reaction rates increase as temperature increases; in fact, kinetic rate equations are generally written  $k(t)$ , to show that they depend on temperature. Vinegar et al. teaches that insulating blankets can be used over soil remediation wells to retain heat in the soil in the abstract. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Manchak Jr; '194 and Manchak Jr '807 to include covering the remediation site with an insulating cover prior to oxidation, in view of basic scientific principles and Vinegar et al., in order to increase both the reaction rate and the reaction yield of the contaminant/oxidation agent reaction.

9. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manchak Jr '194 in view of Manchak Jr '807, and Bruso, US Patent 5830752.

Re claims 7-8: Examiner notes that applicant teaches that step (c) of claim 7 is optional and may not be required; however, examiner is addressing it in an effort to speed prosecution of the case. Manchak Jr. '194 teaches a method of soil remediation to measure and reduce the level of contaminants in soil, comprising churning or comminuting the contaminated soil in situ with a soil mixing device (10,64), injecting hot air into the contaminated soil as it is being churned to thermally strip off organic compounds, and introducing a chemical agent, such as potassium permanganate, into the soil to continue reducing the contaminant level, in col 3 lines 12-55, col 4 lines 8-63, col 6 lines 5-12, and col 8 lines 8-55. While examiner believes that Manchak Jr. '194 does teach that the contaminants are organic and that the comminuting tool is a trenching tool, examiner is presenting an alternative argument to speed prosecution in case it is interpreted that the elements are not inherently taught. Manchak Jr. '807 specifically teaches using a soil remediation method comprising soil comminution, hot vapor injection, and chemical oxidant, such as permanganate, injection, for volatile organic contaminants in the abstract, col 2 lines 45-66, and col 9 lines 4-34. Bruso teaches a method for in situ soil remediation using a trencher to comminute the soil in the abstract and Fig. 3. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Manchak Jr. '194 to include using comminuting tools such as a trencher, in view of Bruso, in order to remediate soil in a continuous, cost-effective and relatively rapid manner and to use a tool known to

effectively comminute the soil and reduce its density to facilitate volatile stripping methods, and to include using the remediation method specifically on organic contaminants in soil in view of Manchak Jr '807 in order to specifically ensure that contaminants requiring oxidizing agents and air, such as organics, would be treated with the method to obtain a large application and customer base.

Re claims 9-11: Examiner notes that Manchak Jr. '194 emphasizes in col 6 lines 5-12 that the method primarily deals with analyzing contaminants, but can also be used to treat contaminants so found, using any combination of steps of injecting additional hot air for stripping volatile contaminants, injection of treatment chemicals, etc. Since the method includes contaminant analysis and contaminant treatment, it is inherent that there would be a target contaminant level, and that treatment would be done until the target level is obtained. Manchak, Jr. '194 claims 15 and 16 disclose that chemical oxidants, such as permanganate, are injected into the soil to neutralized unremoved {emphasis by examiner} contaminants, thus inherently teaching that the chemical treatment is done if needed after the air stripping. Air stripping is disclosed as the initial treatment step, and the difference in cost of permanganate versus air and the possibly undesirable by-products of large amounts of permanganate would explain the implied teaching that the air stripping is used until it is no longer practically effective, and then the permanganate would be used to complete the remediation. Examiner also notes that claim 13 and col 6 lines 5-12 disclose the option of multiple hot air injections, thus the hot air injection comprises a ground heater system for both preheating the soil and hot air injection for soil stripping.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manchak Jr '194 and Manchak Jr '807, and Bruso, US Patent 5830752, and further in view of Vinegar et al. US Patent 5190405. As discussed above, Manchak Jr '194 and Manchak Jr '807, and Bruso, teach all the elements except that a thermal insulation is laid over the soil after introducing the chemical oxidizing agent. It is a well-known principle of reaction kinetics and thermodynamics that combustion or oxidation reactions require energy ( $\Delta H_{\text{reaction}}$ ), and that reaction rates increase as temperature increases; in fact, kinetic rate equations are generally written  $k(t)$ , to show that they depend on temperature. Vinegar et al. teaches that insulating blankets can be used over soil remediation wells to retain heat in the soil in the abstract. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Manchak Jr; '194 and Manchak Jr '807 and Bruso to include covering the remediation site with an insulating cover prior to oxidation, in view of basic scientific principles and Vinegar et al., in order to increase both the reaction rate and the reaction yield of the contaminant/oxidation agent reaction.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 5244310 to Johnson teaches a thermal insulating blanket over soil remediation sites.

US Patent 6283675 to Dulsey et al teaches a method of oxidative soil remediation using a trencher.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine W Mitchell whose telephone number is 703-305-6713. The examiner can normally be reached on Tues-Fri 8am-5 PM and alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather C Shackelford can be reached on 703-308-2978. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-308-8623 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.



**HEATHER SHACKELFORD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600**

kwm  
May 1, 2002